## REMARKS

Claims 1-10 are pending in this application. Applicant gratefully acknowledges Examiner's indication of allowable subject matter in claims 4, 5, and 7. By this amendment, claims 1, 8, and 9 have been amended, and new claim 11 has been added. Applicant reserves the right to pursue the original claims and other claims in this and other applications. In view of the amendments to the claims and the remarks below, Applicant respectfully requests that the rejections be withdrawn and the case be allowed.

Claim 6 stands rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The rejection is respectfully traversed.

The claim 6 subject matter is described in the Specification in a manner that reasonably conveys to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Claim 6 recites that "the mass for which the weighting value indicates the highest value in [a] second pattern [the second pattern weighting in order of increasing frequency] is eliminated when the precursor ion to be subjected to MS/MS analysis is selected." The claim language is supported by the Specification in, for example, paragraphs [0060]-[0062]. As explained therein, "when the frequency is zero, the intensity of the pseudospectrum becomes 1. Specification at [0060]. Since "this means that there is no information about corresponding peptides in the database . . . [and since] it is desirable that there is at least one corresponding peptide . . . masses for which the intensity becomes 1 should be eliminated" Id. The Specification goes on to describe "eliminating the masses such that the intensity of the pseudospectrum becomes 1." [0062]. At least these paragraphs of the Specification support claim 6's recitation of eliminating the mass for which the weighting value indicates the highest value when the precursor ion is selected. Accordingly, Applicant respectfully requests that the rejection be withdrawn.

Claims 1, 2 and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the article "'Top down' protein characterization via tandem mass spectrometry" by Reid et al. ("Reid"). The rejection is respectfully traversed.

The Office Action, at page 4, asserts that Reid teaches calculating frequency information. The "frequency information" described in the present application, however, is different than the "frequency information" of Reid. In order to avoid any misunderstanding, Applicant has amended the claims to avoid the use of the term "frequency information" in the present application.

Reid's frequency information refers to the likelihood of fragmentation (i.e. the likelihood of cleavage). See, for example, p. 671 (referring to the "frequency of fragmentations occurring at preferential cleavage sites.") The likelihood of fragmentation and an actual MS/MS spectrum are compared, and from among a plurality of protein ions, the protein ion of the best match is identified as the protein. Id. The aim is to identify the protein itself.

In contrast, the frequency information of the present application refers to the "number of amino acid sequences" for each mass as recited in the amended claims. As described in claim 1, the number of amino acid sequences with a given mass is calculated. From this calculation and the result of an MS analysis ($MS^1$ analysis), a precursor ion (an ion to be fragmented) is selected. The amendments to claim 1 clarify that the process is completely different than the frequency information in Reid. The claim 1 analysis is controlled in real time, while the cited reference uses frequency information at identification after MS/MS is finished. Claim 1, as amended, recites "calculating a number of amino acid sequences for each mass; obtaining a mass spectrum by performing an MS analysis . . . after the calculating a number of amino acid sequences; [and] selecting a precursor ion based on the obtained mass spectrum and the number of amino acid sequences." Reid does not teach or suggest at least these elements of claim 1.

For at least this reason, claim 1 is allowable over the prior art of record. Claim 2 depends from claim 1 and is allowable for at least the same reasons that claim 1 is allowable. Claim 8 recites limitations similar to the limitations of claim 1, including "a number of amino acid sequences for each mass is calculated" and, after that, "a precursor ion . . . is selected . . through a mass analysis of an actual sample and in accordance with the number of amino acid sequences." Claim 8 is therefore allowable for similar reasons that claim 1 is allowable, and for other reasons.

Claims 3 and 9-10 stand rejected under § 103(a) as being unpatentable over Reid. The rejection is respectfully traversed. Claim 3 depends from claim 1 and is allowable for at least the same reason that claim 1 is allowable. Claims 9-10 depend from claim 8 and are allowable for at least the same reasons that claim 8 is allowable. Applicant respectfully requests that the rejection be withdrawn and the claims be allowed.

New claim 11 depends from claim 1 and is allowable for the same reasons that claim 1 is allowable, and for other reasons. Claim 11 is supported by, for example, the description "it is important to designate the range of intensity of pseudospectra in advance and then select precursor ions within such a range in order of decreasing intensity." Application at [0062].

In view of the above amendment, Applicant believes the pending application is in condition for allowance. If there are any additional charges in connection with this filing or any subsequent filings (including but not limited to issue fees), the Examiner is respectfully requested and authorized to charge Deposit Account No. 04-1073 therefor under Order No. H6808.0094/P094.

Dated: June 2, 2009

Respectfully submitted,

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